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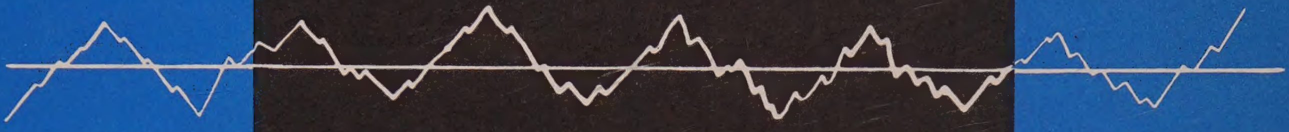

December 1958

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THE OFFICIAL BULLETIN OF THE FOUNDATION FOR THE STUDY OF CYCLES

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THE DIRECTOR'S LETTER

Dear Member:

The 17-Week Cycle

You will remember that in recent months I have been telling you about a little 17.12-week cycle in industrial stock prices.

Some of our members may not realize how *perfectly* this cycle has behaved since it was isolated.

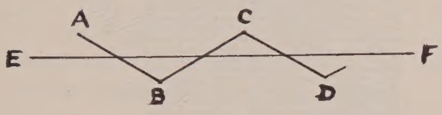
Those members, if any, who think the 17-week cycle has misbehaved simply do not understand how cycles combine with trend, and/or with longer cycles. Perhaps I can make this clear.

Trend

"Trend" is the *underlying tendency*. Trend may be measured in days, weeks, months, years, decades, or centuries. You can talk about the trend over *any* period of time. *Trend* may go in different directions over different periods of time. The trend may have been *downward* over the last few days, *upward* over the last few months, *downward* over the last couple of years, *upward* over the last decade, and so on.

Trend and Cycle

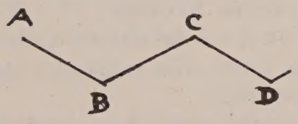
Here is a diagram of a level trend and a cycle.



A to B and C to D are downward legs of the cycle. B to C is an upward leg of the cycle. EF is the trend.

To make it realistic let's imagine that A to C is 17.12 weeks (4 months) B to D would be 4 months also. Each leg of the cycle would be two months long.

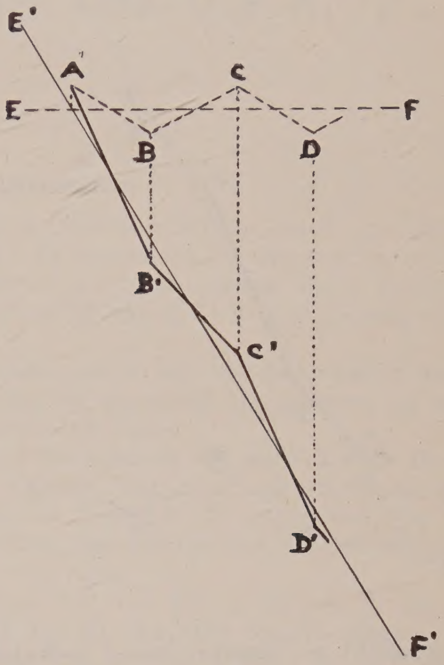
Actually you don't see the trend. It is merely the *tendency*. The *market* (or whatever you were concerned with) would behave like this.



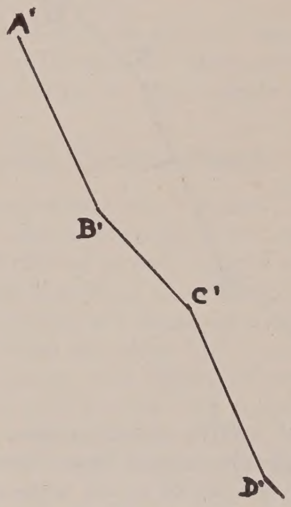
What you see is the *combination* of trend and cycle.

Trend Downward

Suppose now that the trend is downward. The whole diagram falls off to the right. The combination of cycle with level trend is shown by broken lines. The fact that the turning points come at the same time is shown by dotted lines:



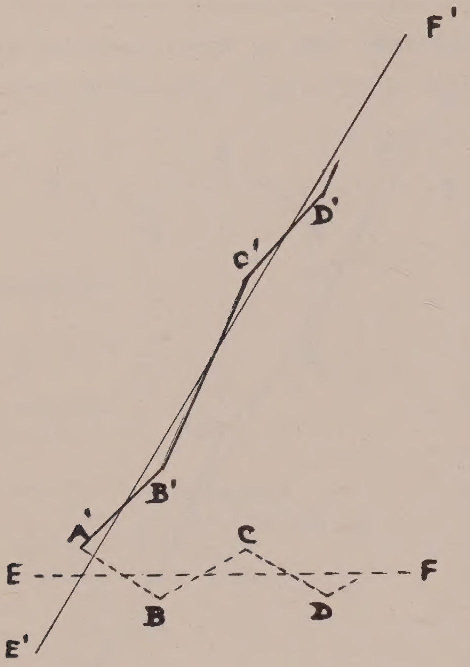
Only, as in the first example, you don't see the trend (except in your mind's eye). What you *see* looks like this.



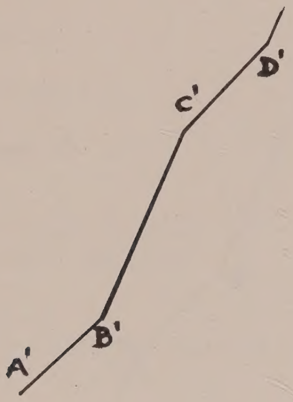
A' to B' and C' to D' are downward legs of the cycle. B' to C' is an upward leg of the *cycle*, even though the trend overwhelms it and the curve, as it is called, is downward. A' and C' are crests of the cycle. B' and D' are troughs of the cycle.

Trend Upward

Suppose the trend is upward. The whole diagram looks like this:



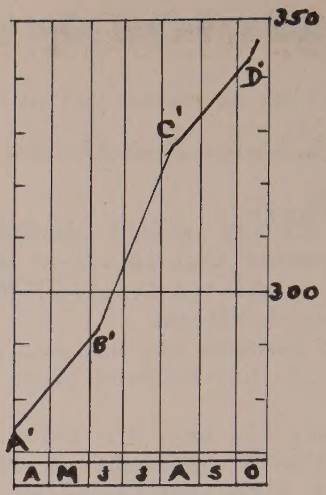
What you would see however would look like this, as the trend, as I have said, is merely in your mind's eye.



A' to B' and C' to D' are *downward* legs of the *cycle*, even though the trend has overwhelmed them so that actually the *market*, or whatever the figures pertain to, goes up.

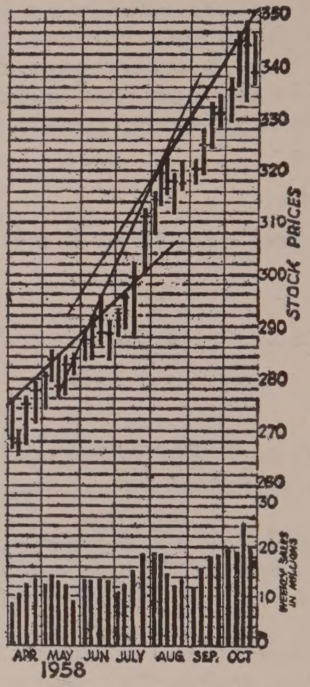
Now let's add scales, as in the chart at the top of the next column.

You note that April to June, was a downward leg of the cycle, June to August, an upward leg of the cycle, August to October, another downward leg of the cycle. You note that the time from peak to peak of the cycle is 4 months (17.12 weeks). Finally you realize that you are looking at a 17.12-week cycle combined with upward trend.



The Actual Behavior

Now let's fill in the full detail as clipped from the New York Times of Sunday October 26th. Slope lines have been added by me.



The *trend* will turn when it gets ready. Maybe it will turn at a peak of the 17-week cycle, maybe at a trough, maybe in between.

The 17-week cycle has never functioned better than during the past six months. Don't count on its continuing so well.

Is it clearer now about how cycles function?

Ever cordially yours,

Edward R. Dewey

Director

P.S. If you run a business, be sure to read Bob Geisinger's ad on the outside back cover.

Research by Staff

TWO CYCLES AND TREND IN PATENTS ISSUED IN THE U.S.A.

BY E. R. DEWEY

The record from 1838 through 1957 of the total number of patents issued by the United States exhibits two cycles, one 8.3 years long, and one 9.17 years long.

The combination of these two cycles is just past a peak due ideally in 1958. After this year's peak, the combination of the two cycles turns down toward a low due ideally in 1962.

Note that it is the combination of the two cycles that this part of the discussion is about— not the original figures. That is, the 1958 peak is in the curve of the combined ideal cycles, not in the actual number of patents issued.

There are other cycles present in this series, particularly one that is probably about 22 years long. There is also present the underlying growth trend. If the other cycles which are present were isolated and combined with the 9.17- and 8.3-year cycles, and the result of this combination added to the underlying growth trend, and then any extraneous factors accounted for, the resulting figure would approach the actual figure.

This discussion is about the two cycles and about the underlying growth trend only.

The 8.3-Year Cycle

Figure 1 on the following two pages shows the analysis by which the two cycles were definitized.

At the top of the chart Curve A diagrams the deviations from a 9-year moving average of the data. The ideal 8.3-year cycle was derived from these figures. The ideal cycle is shown as Curve B, the regular and symmetrical broken line.

The ideal 8.3-year cycle had a top at 1958.3 (April). It is now on the way down to a low due about the middle of 1962.

The amplitude of the ideal 8.3-year cycle is 11.9% above trend at time of crest, and 10.7% below trend at the time of low.

The 9.17-Year Cycle

Curve C on Figure 1 shows the deviations after the 8.3-year cycle has been removed. Curve C is the basis of the second cycle which was isolated.

The second cycle is the 9.17-year cycle which is diagrammed by the broken line, Curve D.

The ideal 9.17-year cycle has a top due at the middle of 1959, after which it turns down toward a low due during 1964.

The amplitude of the ideal 9.17-year cycle is 8.4% above trend at the tops and 7.7% below trend at the ideal lows.

The Combination

Curve A (the deviations which are the basis of the work) is repeated at the bottom of Figure 1. Compared to it is the broken line, Curve E, which is a diagram of the 8.3- and 9.17-year cycles combined.

The combination of the two cycles explains as well as can be expected the contour of the actual (or deviations) line.

Curve A represents the actual wave in the sense that it is the result of computations involving the original figures. It expresses the relationship between the data and a 9-year moving average trend of the data.

On pages 320 and 321 on Figure 2 the top lines (Curves A and B) show the actual record of patents issued and the 9-year trend. It is the ratio of the original figures to the 9-year trend which is shown by Curve A of Figure 1.

As you can see on Figure 1, the actual waves up and down are large at the beginning, and then fade to a low level in the middle of the curve, and then become large in amplitude again toward the end of the record.

The ideal line, Curve E, which combines the two cycles, follows the structure of the actual line, being large at both ends and flat in the middle.

The Underlying Growth Trend

If all the cycles are removed from the original figures, and all the randoms are smoothed to nothing, the underlying growth trend remains.

Curve C on Figure 2 is a picture of the underlying growth trend of patents issued. The figures were manipulated so that the cycles were removed and a smooth curve was drawn through the residual.

This trend, of course, is a matter of opinion, as is any trend. For example, there is little question that Curve C bends downward in the past 20 years. This is easily seen in the curve of total patents issued. The *extent* to which the trend curve is bent is, to a certain extent, the subjective conclusion of the individual drawing the line.

This situation interested me. I followed the problem of the decline in the trend of patents issued through one more step, namely, patents issued per million population

Curve D on Figure 2 is the growth trend of patents issued per million population. It was computed by dividing the value of the number of

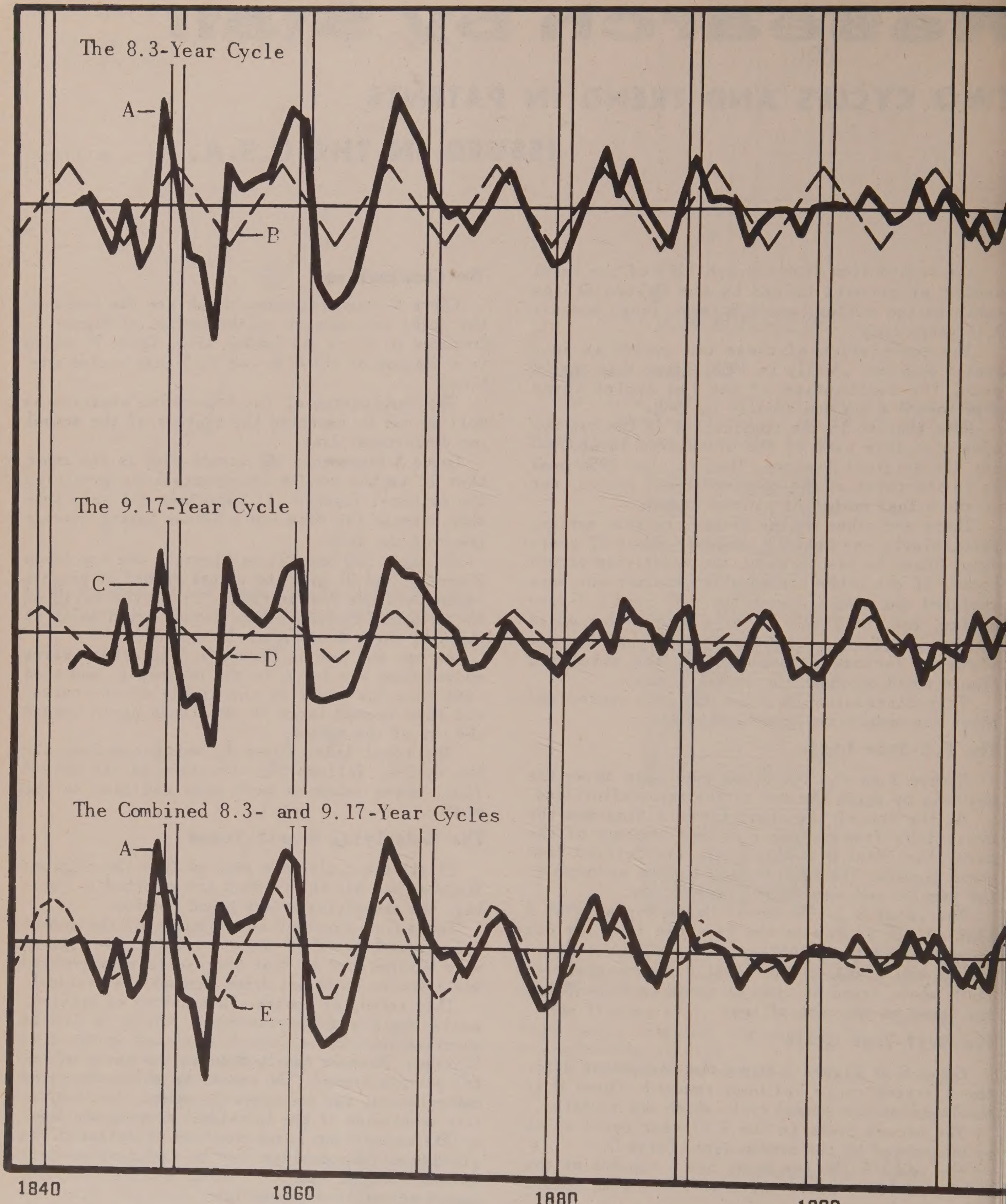
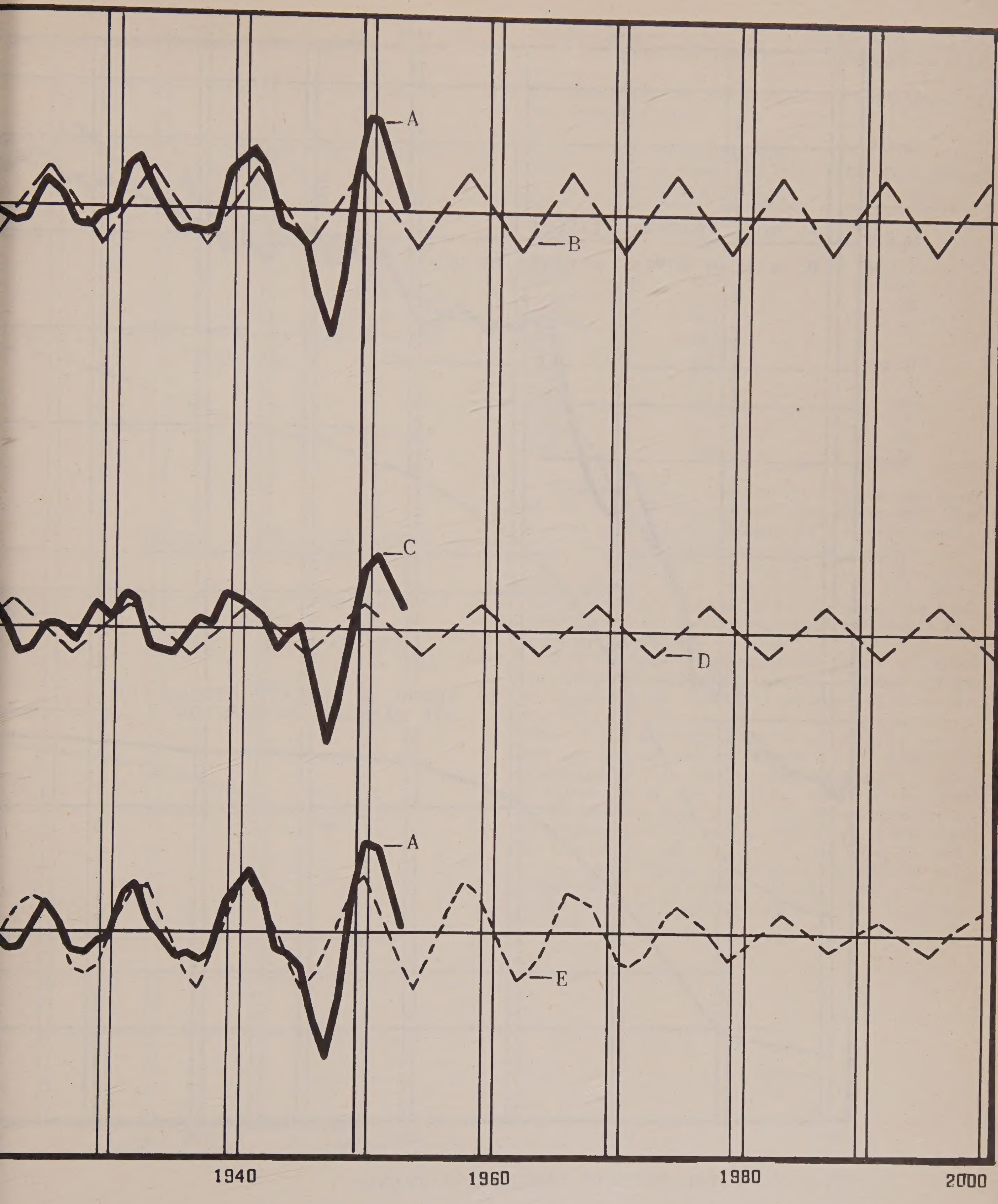


FIGURE 1 - CYCLES IN PATENTS ISSUED


A
B
C
D
A
E
1940
1960
1980
2000

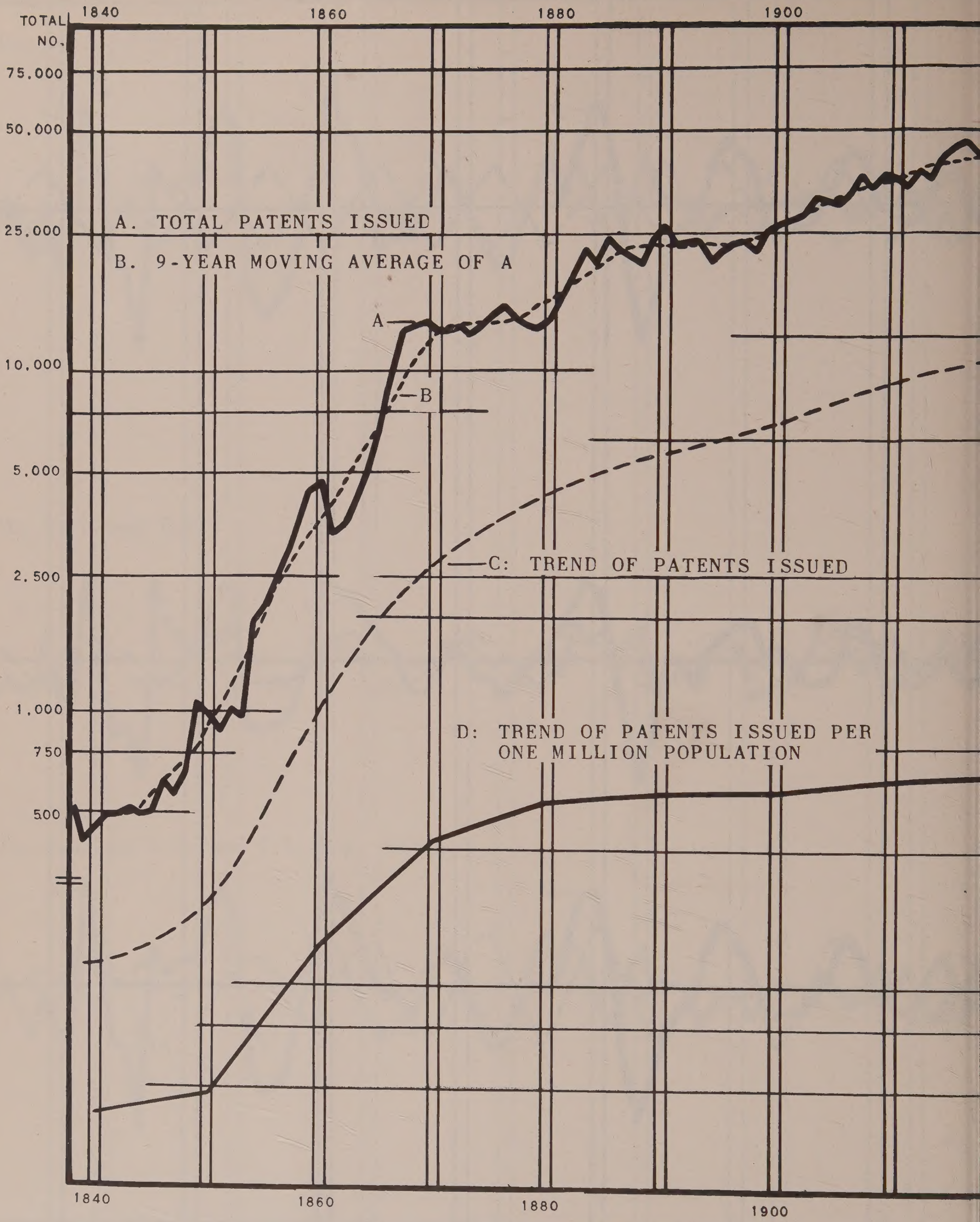
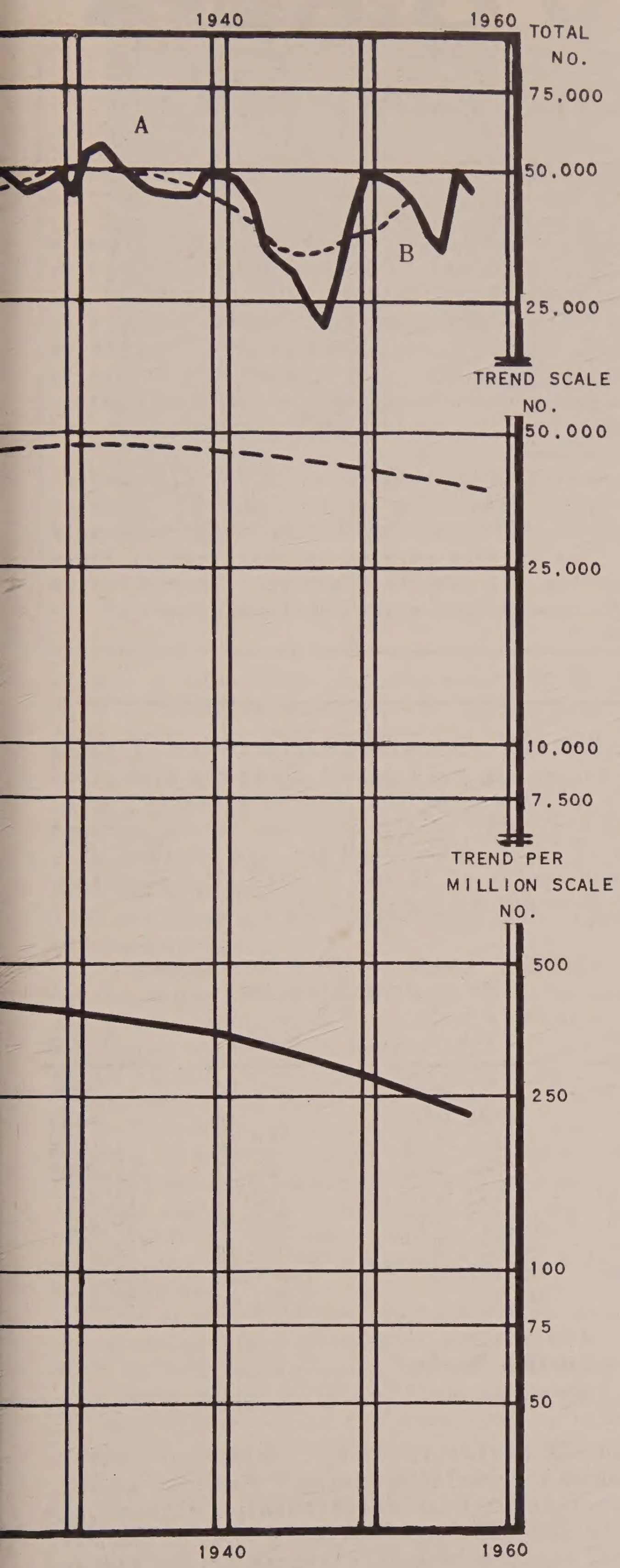


Fig. 2. TOTAL PATENTS ISSUED AND TRENDS



patents issued (smoothed) in census years and in 1957 by the total population expressed in millions.

The results of this computation are shown in the following table:

Year	Number of Patents Issued (smoothed) Per Million Population	Per Cent Change
1840	41	
1850	47	15
1860	130	177
1870	269	107
1880	346	29
1890	364	5
1900	367	1
1910	399	9
1920	413	4
1930	381	-8
1940	347	-9
1950	277	-20
1957	226	-18

From the table it is easy to see that the peak in the *rate* of increase occurred about 1860. The actual peak in the number of patents issued (smoothed) per million population occurred about 1917. The per capita issue of patents has been declining steadily ever since. In the forty years that have elapsed since the peak, the number of patents issued (smoothed) per capita has declined by over 45%!

I do not know enough about the patent situation to comment intelligently upon the facts disclosed by these figures. However I am impelled to wonder whether such a pronounced decline over so long a time in the per capita number of patents issued may not in some way be related to the growth of socialism in this country and/or to the much publicized lag in our science. Could it be that people who are bred to look to the government for everything feel no need to think for themselves? Or that people badly trained (in the mass) to read, write, and figure are unable to perfect such glimmerings as, in spite of socialism, they may have? I do not know, but it might be important to find out.

Research by Others

JOHN NELSON'S LATEST DISCOVERIES RELATIVE TO CYCLES IN RADIO WEATHER*

BY JACK A. DORLAND

Editor's Note: Mr. Nelson's work is of basic importance, not only for radio weather forecasting but for the subject of cycles generally. It is of especial interest to me for three reasons:

First of all, it illustrates another successful application of forecasting based upon a knowledge of cycles. Using such knowledge, Mr. Nelson's forecasts of radio weather have attained an accuracy of over 90%.

Second, the correspondence in timing and time span between the cycles of shortwave radio disturbances over the North Atlantic and planetary cycles interests me because it shows how a knowledge of cycles can suggest the possibility of a cause which might otherwise be unsuspected. That is one reason why we study cycles—to help trace causes.

Third, I find myself interested in Mr. Nelson's work because I want to know if there are correspondences between these planetary cycles of his and terrestrial phenomena other than radio disturbances. Are there corresponding cycles in weather for example, or corresponding cycles in plants and/or animals—or man? All of these possibilities need to be explored in the months and years to come.

Mr. Nelson's work was first officially recognized by the Foundation for the Study of Cycles on October 23, 1951. On this day he was given a gold medal "for notable service in the field of radio propagation and planetary cycles. The following article reports upon seven additional years of research.

Through the use of cycles, John H. Nelson, is now able to forecast daily radio weather in 4-hour intervals, with an accuracy of over 90%. He also issues monthly forecasts in 12-hour intervals for each day with an accuracy of over 85%.

Nelson is Propagation Analyst for RCA Communications, Inc. He is the man responsible for telling the world-wide operating divisions of RCA whether the radio weather between New York and Europe will be good or bad and assists them to establish suitable frequencies for the transmission of messages. More than 7,000,000 messages a year depend on the proper selection of frequencies for speedy and accurate handling.

Actually there are nine grades of radio weather as follows: 1, useless; 2, very poor; 3, poor; 4, poor to fair; 5, fair; 6, fair to good; 7, good; 8, very good; 9, excellent. The technical name for these grades is "radio propagation quality." Nelson has to tell what grade the radio propagation quality is going to be.

Nelson Uses Cycles

Nelson uses thirteen cycles together with their fractions and interrelationships. Nine of these basic cycles are the times it takes the nine planets to go around the sun; one is a yearly cycle, one is the cycle of the day; one is the sunspot cycle of 11.15 years; and two are shorter disturbance cycles of 27 and 31 days. The planetary cycles have the following lengths:

Length of time it takes the Planets
to go around the sun

Planet	Days	Months	Years
Mercury	87.9686	2.89	.2408
Venus	224.7007	7.38	.6152
Earth	365.2564	12.00	1.0004
Mars	686.9804	22.57	1.8808
Jupiter	4,332.5870	142.34	11.86
Saturn	10,759.2025	233.48	29.46
Uranus	30,685.93	1,008.14	84.01
Neptune	60,187.64	1,977.38	164.78
Pluto	90,737.	2,981.0	248.42

Nelson's Own Words

Let me report Nelson's discoveries in his own words:

"In RCA Review in 1951, I announced that I had found a correlation between magnetic storms and certain angular relationships between the planets and the Sun. Basically what I had discovered was that magnetic storms *seldom started* unless there was a planetary arrangement using the sun as the center of a circle, wherein one fast planet was 0° with a slower planet, 90° ahead or behind a slower planet, or 180° from a slower

---

*THIS ARTICLE IS BASED:

1) ON NOTES BY THE AUTHOR OF A TALK BY JOHN H. NELSON, PROPAGATION ANALYST OF RCA COMMUNICATIONS, INC., AT A DINNER-MEETING OF THE NEW YORK CHAPTER OF THE FOUNDATION FOR THE STUDY OF CYCLES, HELD IN NEW YORK CITY ON SEPTEMBER 10, 1958.

2) ON VARIOUS CONVERSATIONS BETWEEN MR. NELSON AND THE AUTHOR, BEFORE AND AFTER THE ABOVE-MENTIONED TALK.

3) ON OFFICIAL PUBLICATIONS OF RCA COMMUNICATIONS, INC.

4) ON PREVIOUS ARTICLES ON THIS SUBJECT IN CYCLES; NAMELY FOR DECEMBER 1951, PP. 379-80; FOR MARCH 1952, PP. 87-89; FOR MAY 1953, PP. 155-6; FOR OCTOBER 1955, PP. 229-33; AND FOR NOVEMBER 1955, PP. 267-272, WITH CORRECTION PUBLISHED IN JANUARY 1956, P. 24.

John H. Nelson

JOHN H. NELSON was born in Gloucester, Massachusetts, in 1903. He has spent over thirty-five years in his chosen field of radio operations—and that entire time with the Radio Corporation of America. From 1923 to 1930, he was one of RCA's radio operators; from 1930 to 1938, he was one of their traffic chiefs; from 1938 to 1946, a supervisor of their radio room; from 1946 to date, he has held the position of Propagation Analyst—in lay language, "radio weatherman."

In addition to this wealth of commercial experience in his chosen field, Nelson has followed the same field in his hobbies. For instance, for the last thirty years he has been an amateur astronomer, even to the extent of actually grinding his own lens and building his own telescopes. He has written many papers on the "effects" of sunspots on radio weather. He has lectured extensively on that subject to professional and academic groups throughout the country. In 1951, the Foundation for the Study of Cycles awarded him its Gold Medal Award *(for research in radio propagation).*

planet. I also said that the more planets there were in these arrangements at approximately the same date, the more severe the magnetic storm would be.

"I stated that, although a magnetic storm seldom started without an arrangement of this type, many 0°, 90°, and 180° arrangements failed to produce storms. Since 1951, I have been conducting research to find why some 0°, 90°, and 180° arrangements were associated with storms and others were not.

"The solution to the problem has come about by the study of the angles that are evenly divisible into 90° or 180° and therefore harmonic to all major angles. The angles of 15°, and increments of 15°, were found to be the key. When a situation exists where two planets are 90° apart at a time when three or four other planets are related to them at angles evenly divisible by 15°, the incidence of magnetic storms is higher. These related angles are termed harmonics, and, unless they exist at the *same time* as the 90° or 180° angles, the chance of a magnetic storm's develop- is negligible.

"The study of 15° multiples has also explained why *occasionally* a storm will start without a 0°, 90°, or 180° angle being present. These storms come about when two fast planets are separated by 15° or 30° and are at the same time related to a third or fourth planet which is harmonically related to them also at an angle evenly divisible by 15°, being something other than a 0°, 90°, or 180°.

"I have found that one half of 15° which is 7.5°, one half of 45° which is 22.5° are also associated with the intensity of a storm, if they are associated with the aforementioned harmonics in timing. These angles are 7.5°, 22.5°, 67.5°, and 82.5°, and 90, 180 or 270° plus these angles.

"For an example of planetary arrangements associated with bad radio weather see Fig. 1.

"Fortunately for radio communications the planetary arrangements associated with magnetic storms, which are associated with radio blackouts, are so seldom met in the planetary system that we are able to enjoy a preponderance of good radio conditions.

"All of the Sun's nine planets (from Mercury to and including Pluto) are important in these arrangements, and the mass or distance of the slow planet from the sun has no perceptible importance. The fact that many of the major magnetic storms of the past twenty years are related to Pluto is both puzzling and amazing."

Another Old Wives' Tale Goes Out

It used to be thought that bad radio weather was caused fundamentally by sunspots. However, as a booklet issued in 1957 by RCA Communications, Inc., under the title "Another Old Wives' Tale Goes Out" points out, the belief that *all* sunspots are bad for radio communications is "an old wives' tale"—that is, is unture. The booklet continues as follows: "Old wives' tales" in ancient times were created wholly out of *active* imagination and *passive* concern for facts. With the advent and progress of the sciences, many such "scientific" beliefs have been discarded or corrected, in the light of later observations, advanced study, and newly discovered facts. When a belief has thus been made obsolete, it becomes, in effect, a latter day 'old wives' tale,' with no more scientific validity than its imaginative predecessors in antiquity."

Sunspots, as a matter of fact, have been the subject of "old wives' tales" since ancient times. For instance, the ancients believed that, when the sun was near the horizon, or forest fire smoke

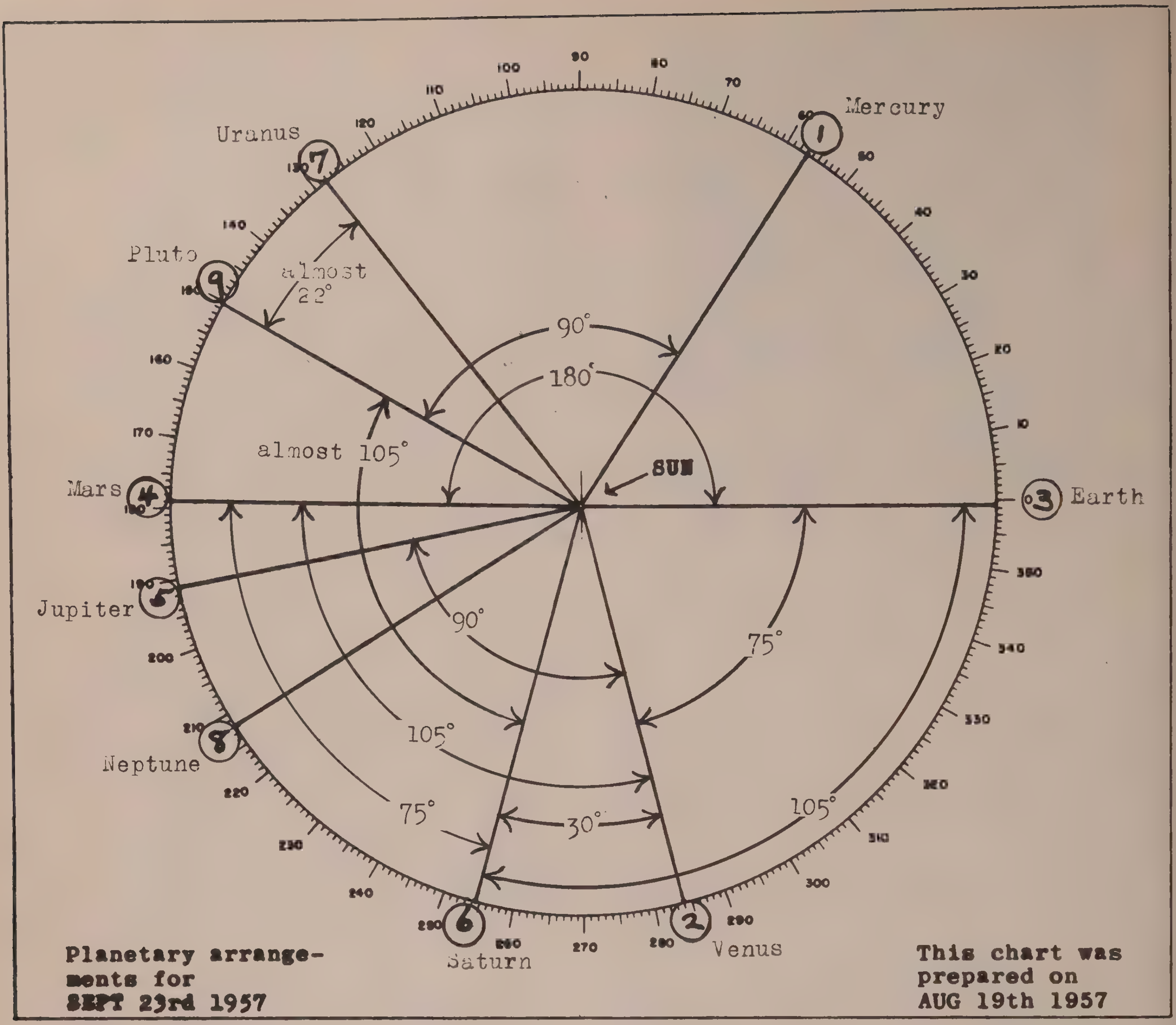


Figure 1. Planetary Arrangements September 23, 1957. THE EXPLANATION OF FIGURE 1 FOLLOWS:

The heliocentric planetary arrangements for September 23rd, 1957, for 7:00 p.m. E.S.T., (00:00 G.M.T.) are shown on the accompanying chart. There were severe magnetic storms and radio disturbances on September 21st, 22nd, and 23rd. This three day disturbance was officially predicted to the radio industry on August 19, 1957.

This chart is a good example of the type of separation angles that are considered significant in this field of research. During the three-day disturbance, Venus made a 90° angle with Jupiter; Earth made a 180° angle with Mars; Mercury made a 90° angle with Pluto.

In addition to these basic angles, we can also find a strong series of harmonics of the 15° classification. Venus to Earth, 75°; Venus to Mars, 105°; Venus to Saturn, 30°; Earth to Saturn 105°; Mars to Saturn, 75°.

Going further, we find Saturn, Pluto, and Uranus related. Saturn and Pluto are almost 105° apart; Pluto and Uranus are almost 22.5° apart.

The most severe portion of the storm came late on the 22nd and early on the 23rd when Mercury tied Venus, Mars, and Saturn together with a series of very sharp 15° harmonics. In other words the angles separating these three planets were all exactly divisible by 15° at the same hour.

The actual radio conditions were as follows: Sept. 22nd: midnight to 8 a.m., poor; 8 a.m. to 4 p.m., fair; 4 p.m. to midnight, very poor. September 23rd: midnight to 8 a.m., very poor; 8 a.m. to 4 p.m., fair/poor; 4 p.m. to midnight, poor.

filled the air, the large spots they could see on it were planets between the earth and the sun. Still later, when astronomers first observed sunspots through a telescope, people asserted that the astronomers were wrong—that the "spots" must have been spots either in the astronomers' eyes or on the telescope lens! Even as late as the last century, a clergyman claimed "that the Sun was Hell itself and the dark spots (sunspots) were clusters of damned souls."

The belief that all sunspots were bad for radio weather and that sunspots were the basic cause of radio weather disturbances, is now as outmoded as these other notions. It is the planetary cycles and the angular relationships of their interaction that seem to determine *the kind of sunspot*, and which therefore are of prime importance in predicting radio weather.

Summary

1) The ionosphere is a layer of rarefied gas enveloping the earth about two hundred miles above the earth's surface. It is created primarily by Solar radiation, particularly ultraviolet.

2) Radio signals are transmitted by "bouncing" them off the ionosphere and back to earth again.

3) The "stronger" the ionosphere—that is the more highly ionized—the better the bounce; hence, the better the radio reception.

4) The ionosphere is at its strongest when sunlight is rich in ultraviolet.

5) The ionization of the ionosphere varies with sunspot activity being high with a great many sunspots and low with only a few sunspots.

6) "Good" sunspots (those rich in ultraviolet light) strengthen the ionosphere, hence aid radio communication.

7) "Bad" sunspots (those deficient in ultraviolet light and showing great activity) weaken the ionosphere, hence impair radio communication.

8) Planets in their cyclic orbit around the sun seem in some way to be associated with the activity or lack of activity in sunspots.

Certain positionings of the planets, relative to one another, seem in some way to be associated with the development of sunspots that are damaging to radio transmission.

Certain other positionings of the planets relative to one another, seen in some way to be associated with sunspots that are favorable to radio transmission, i.e.-not active.

These relationships seem to have the same "effect" irrespective of the distance and/or the mass of the planets involved. This fact would be unbelievable, if it were not demonstrably true.

9) Thus a knowledge and study of planetary arrangements has provided one of the chief bases of Nelson's prediction of radio weather. These predictions have enjoyed an accuracy record of over 90% for several years.

10) The ionosphere is most highly ionized—that is, most capable in assisting in the transmission of radio signals—in the daytime when the sun is shining on the radio path; conversely the ionosphere is least ionized—that is, the least capable of assisting in the transmission of radio signals—in the nighttime, when the sun is shining on the other side of the world. This is another say of saying that there is a 24-hour cycle in radio signal transmittibility.

11) There is a definite seasonal variation (a 1-year cycle) in the degree of ionization of the ionosphere, and hence in radio signal transmission and reception conditions. Conditions are better in summer, worse in winter.

12) There are also 27-day and 31-day cycles in the recurrence of magnetic storms (the type of storm apparently due to excessive sunspot activity), hence cycles of similar length in ionospheric strength and radio signal transmittibility.

Magnetic storms on the earth greatly disturb the ionosphere's abilities along signal-reflecting lines. During such storms, the bulk of the ions apparently leave the ionosphere; hence, the ionosphere becomes weak and much less capable of reflecting radio signals back to earth, it also becomes turbulent; hence, the quality of radio signals is impaired in direct ratio to the extent of the reduction in the degree of ionization of the ionosphere.

Periods when the aurora borealis is present are also known to be times of great disturbances in the earth's magnetic field. During such times, radio transmission is practically impossible, since (quoting Nelson), "A radio signal cannot penetrate an aurora borealis."

13) An 11.15 year cycle is present in the strength of the ionosphere, and hence in radio signal transmittability. A cycle of similar length is present on the average in numbers of sunspots.

Technical

ADVENTURES IN FORECASTING

BY H. K. RUTHERFORD

PART I: STRUCTURE OF COMPONENT CYCLES

The purpose of this study is to take several theoretical component cycles, combine them into a composite "economic series" and then to investigate what symptoms we can detect in the composite to assist in forecasting the future.

Since other studies published by the Foundation show that, in practice, there may be dozens of components operating at a given time and since much detail is omitted, the illustration used is about the ultimate in simplification. Much information may be obtained from even this, however, and other students of cycles may try different combinations and discover much more than is attempted here. The writer has carried his work much further as later parts of this report will develop.

The Component Cycle

At the top of Figure 1 are shown three component cycles. These are a long major component in solid black, a steeper and shorter intermediate component in broken black, and a short minor component in solid black.

In the lower part of the chart, these components are shown combined, according to their respective plus or minus values from the zero line, into a composite line which, perhaps accidentally, bears considerable resemblance to many actual series.

Our problem now is to study the action of the composite and having here the unusual advantage of knowing what causes its vagaries, to determine from effects what the causes are and then to use these causes as a means of forecasting the composite.

The Analysis

Having no back record of immediate importance on our curve, we start at A and let it develop. We note the steep move and observe that it is due to the fact that the principal components are acting in unison downward. About midway between A and B, where the intermediate component is passing through its zero level and thus becomes largely ineffective, the minor has its maximum influence and produces a temporary slowing down of the major component. The fact that, after this, the curve continues at the same speed as before, shows that the two chief components are still in unison down.

At B the curve definitely turns after a little churning, but proceeds up less vigorously than it came down. We conclude that the chief components are now in opposition and having no evidence that the major has turned—to be developed later—it appears that it must be the intermediate. The fact that the major was crossing its zero level at the time permitted the intermediate to have its maximum influence at this point B.

The conclusion that the chief components are now in opposition leads to the forecast that the rally will be only an intermediate one and will terminate when the intermediate component reverses. Along the way to this point C, we have the expected hesitation as the intermediate passes its zero level and the minor gets in its dirty work.

At C, we get a trend line AC, parallel to the major component, and through B we draw a similar parallel which will soon be useful.

At D, we observe the expected minor reversal, but thereafter a less precipitate decline than before. So far, this is not very disturbing, although this flattening out of the curve after a minor congestion would cause one to suspect that one of the chief components causing the long trend from A had reversed. But when the curve reversed vigorously at E *without reaching the parallel*, we had conclusive evidence that it was the major that had turned previously at D, and that the climax at E was caused by the intermediate, still influential enough to overcome the opposing action of the major. Thus the climax occurred, not at the reversal of the minor, but at that of the intermediate curve.

In view of the preceding, it appears redundant to follow the curve along the up move of the major which is merely the foregoing in reverse. We will conclude with some observations of what we have learned as a result of this elementary discussion, realizing that their application in practice, especially where many components make a detailed chart more confusing, will not be easy.

Observations

1. Important turns in the curve occur when the steepest component reverses.

2. A long precipitate move indicates that the chief components are in unison in the same direc-

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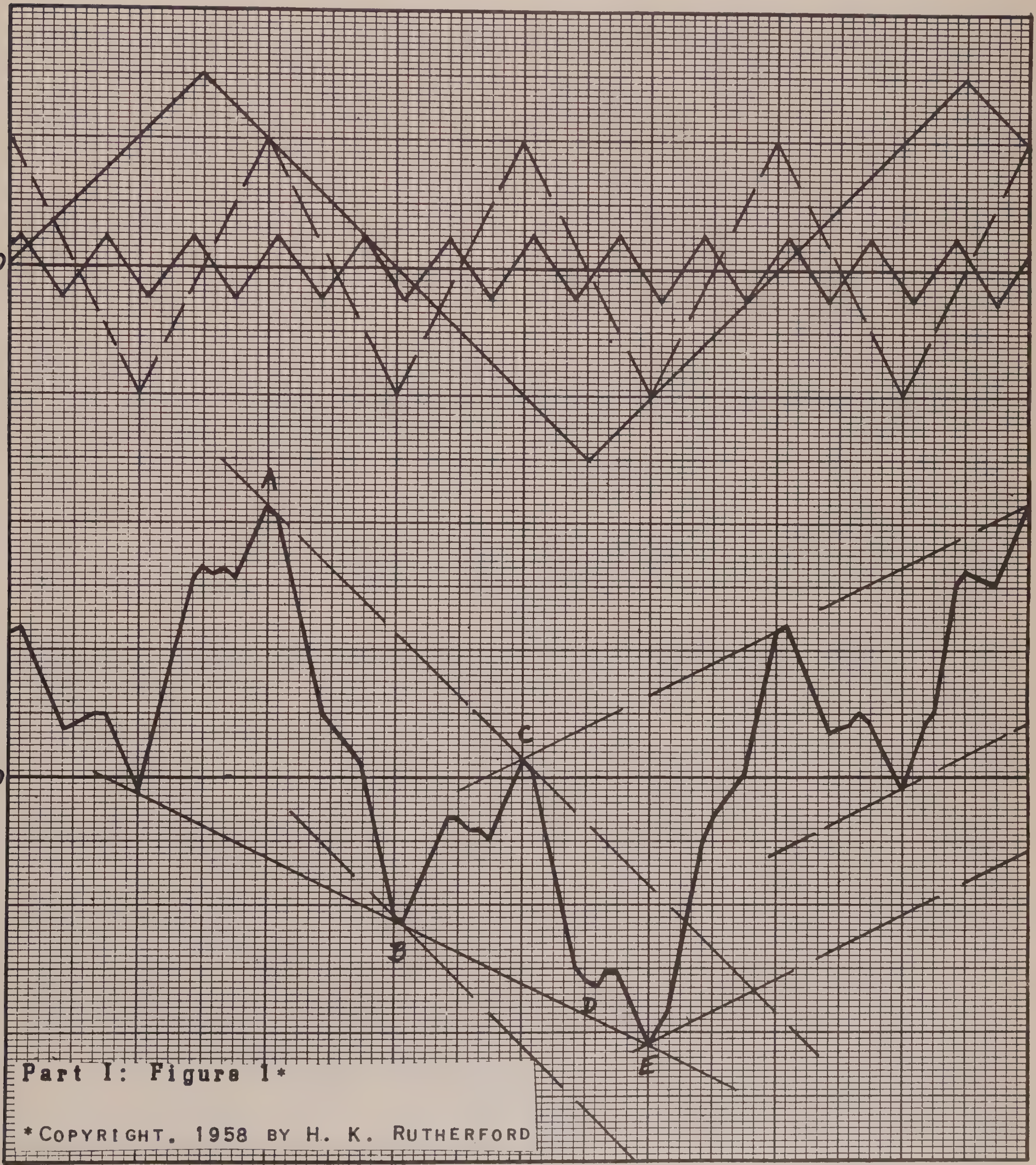
Editor's Note: This begins a series of articles by H. K. Rutherford on the analysis of charts. Part I was printed in the March 1955 issue of *Cycles* and is reprinted here for background. Part II continues the presentation with more recent work and will be followed by additional articles explaining more complicated techniques and showing specific examples of the application of these techniques to actual data.

tion. If less so, relative to previous performance, that they are in opposition, and that the move will be intermediate in character.

3. Failure of the curve to reach an established parallel is clear evidence that the component causing the corresponding trend has *already* reversed. The violation of the trend confirms this conclusion if any is necessary. Thus the classical use of the "channel" of parallels has reasons for its validity.

4. An additional observation not illustrated on the chart is that if the two chief components



Part I: Figure 1*

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reverse at the same time, we get the classical head and shoulders formation in the curve. Obviously, with many components operating and rarely two of them sufficiently dominant and properly timed, we do not find this picture developing often. However, it maybe added that, in a stock average, such a picture appeared clearly in 1953, with a climax in September of that year.

5. The reader may be cautioned here that when the curve does reach the parallel, it does not *necessarily* indicate that the component responsible for the trend has not reversed. It and a lesser component may reverse at or about the same time, of which the later development of the head and shoulders is the confirmation.

6. The number of steps making up a long move depends, of course, on the number of influential components and their relative lengths. Only two are shown on the chart. If the reader wishes to add a still longer one, he may slope the zero lines up or down to parallel one leg of the new component.

7. The writer has purposely omitted from the discussion his procedure in forecasting turns in the curve which give him exact dates. An explanation of this procedure will come later.

8. As one little task for the reader, no comment will be made on the significance of the three point contact with the top trend originating at point C—or its parallel. To assist, it is suggested he draw a similar one through the bottom B.

Addendum

It is obvious that the effect of any component on the composite is temporarily nil at the precise time that component passes its zero level or reverses. At any given time on either side of these points its plus or minus values will be equal with due regard for sign. The period during which its action will be *comparatively unimportant* as far as movement of the composite is concerned, depends on the relative slope of all components and their periodicity. Thus we will have congestions in the curve at these times—long or short depending on the relationship of components. It may be added, parenthetically, that long congestions also appear in the curve when the chief components are working in general opposition.

Of more importance, however, is the recognition in the action of composite at any time what component cause is doing what. Is it crossing zero for a continuation soon, at a reversal to work in opposition shortly, or in between. Once this has been determined, and it is not difficult, information is available from which reliable forecasts of the composite can be made. Moreover, since "congestions" are caused by the interaction of *periodic* components, they may be forecast and it is not necessary to await their development in the curve, Their due date and nature may be determined far ahead and when they appear, they permit a useful check on one's earlier conclusions.

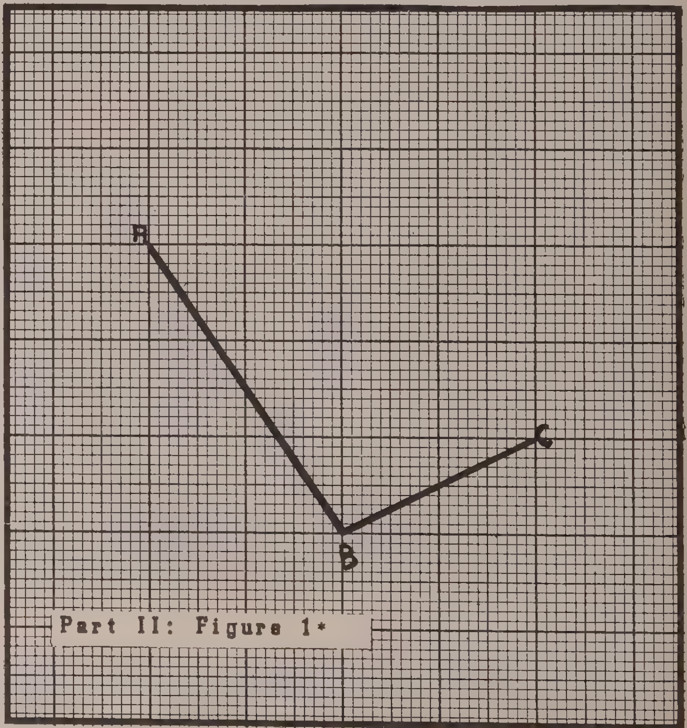
PART II: DEVELOPMENT OF COMPONENT CYCLES*

The chief objective in the study of a series of figures is that of forecasting. Where the study is able to isolate rhythms in the series, these may be projected and combined to obtain a composite prediction.

If, however, other standard procedures can be derived from rhythmic series, it would appear that they must include the rhythms also and that they have a place in cycle analysis and prediction. This article continues the discussion in Part I.

Figure 1 is a theoretical graph, supposedly extracted from a long chart, and represents the first down-step and partial recovery in a long down move. For clarity, only the extremes of important turns are shown, omitting minor detail. The time period from A to C may be weeks, months, or years—it makes no difference. (As a matter of realism, Figure 1 is close to the weekly production of steel in the early part of 1957.)

Anyone familiar with uniform cycles in combination will recognize in Figure 1 the composite of two components rhythms. First, a major cycle the slope of which during the A—C period was parallel to AC. Second, an intermediate cycle which, during



Part II: Figure 1*

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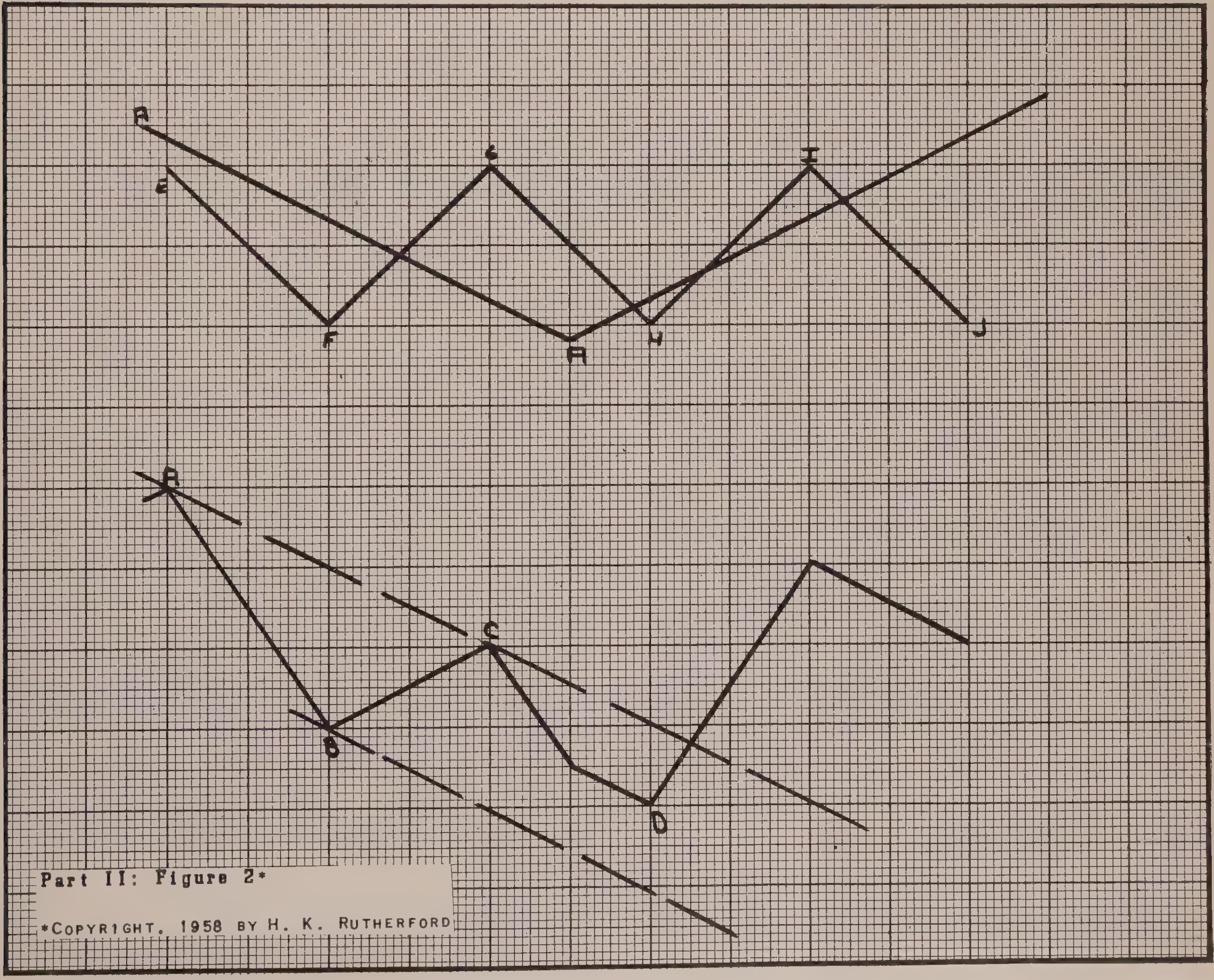
the AB time, was moving in the same direction as the major to product a steep decline, and during the BC time was moving opposite to develop a moderate recovery. (Thus Figure 1 alone gives some information of value in predicting the general progress of the curve after date C.)

In Figure 2 the line from Figure 1 is shown as a part of a longer theoretical series. In the upper section the two regular simple rhythms creating the lower composite have been charted. The resolution of the composite into its components is here very simple and need not be discussed further, except to observe that this is a futile procedure in many actual series for reasons which follow.

We have from Figure 1 complete information regarding the period and amplitude of the intermediate component and can expect it to repeat quite uniformly in timing. However, at its repetitions, the effect on the composite must include the contribution of the major and a reversal of the latter will affect the combination importantly. Here, then is a vital unknown. All we know about the major so far is that it is parallel to AC, hence its location in the upper portion of Figure 2 is random.

Obviously, after date C, assuming that the major will continue down without reversal during the next down move of the intermediate, the composite will reach the parallel to AC, drawn through B, at date D. This would be our tentative forecast. We have, however, shown in the upper portion of Figure 2 a reversal of the major prior to date D and noted the effect on the composite, presumably the only data available. We find a change of slope in the curve, some further progress because of the influence of the intermediate but a clear failure to reach the parallel and eventual violation of the trend line. The significance of these indications as regards predicting the major trend needs no further comment except to remark that, in a practical example, minor influences often obscure this development.

If the curious reader wishes to pursue the study with other periodicities of component, he will find that had both components reversed at date D,



Part II: Figure 2*

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the parallel would have been reached then, the slope of the composite would have been equally steep on both sides of D and the classical "head and shoulders" formation would have developed, with the recovery reaching the C level. Had the major reversed after date D, the recovery would have been moderate at first until accelerated by the major reversal, after which the curve would have reached a level above C at the next reversal of the major.

Before proceeding to more definitive procedures in forecasting, a few comments appear necessary. The extreme reached at any reversal is caused, not usually by the major component involved, but by a lesser rhythm which adds or subtracts its bit when the major is *near* a turn and may therefore temporarily become dominated by the lesser as far as effects on the curve are concerned. Hence it is not strictly correct to consider the extreme of a move as the date of an important component reversal—it is the combined result of many rhythms. No serious results appear from this lack of precision, however, since minor or random influences will largely cancel out over a period and affect timing very little.

We may summarize up to this point by observing that tentative and usually longer range forecasts may be made on the assumption that the components of our chosen cycle will continue reasonably close to established performance. Progress with respect to parallels or other "objectives" to be discussed later will be noted to determine if our forecast is still valid or needs revision. Such periodic checks are advisable when the secondary component is due for reversal and this brings us to the essentials of the forecasting procedure, to which the preceding has been a necessary preliminary.

If our belief is correct that component rhythms repeat in timing, we may expect developments of intermediate, but now necessarily major importance at each regular reversal date of the intermediate rhythm. Knowing its period from the graph, we can now consider how its projections may be shown most conveniently for use. Obviously, uniform extensions are easily made by counting spaces, or with dividers. The writer uses another procedure giving the same result but with additional points of reference. This procedure is by the use of "k" points and "intersects" which will be discussed in Part III.

to be continued

Chapter Affairs

NEW YORK

On Thursday, December 4, Mr. E. R. Dewey, who is the Director of the Foundation, will speak at the regular monthly dinner meeting of the New York Chapter. His subject will be "How To Make A Cycle Analysis."

SAN FRANCISCO

Irving L. Fisk reports that the first fall meeting of the San Francisco Chapter was held October 8 at the Marines Memorial Club. A talk on the topic, "Inflation and American Dollars," was given by Lawrence R. Kiebler. Mr. Kiebler is a partner in the investment counseling firm of Hanan & Kiebler and is a well known San Francisco economist.

Future meetings are being scheduled by the Chapter. Those interested in membership may send five dollars dues to the Treasurer, Mrs. Maxine Taylor, 655 Sutter Street, San Francisco.

LOS ANGELES

The first meeting of the Los Angeles Chapter was held October 21 in the New Yorker Room of the Statler-Hilton Hotel.

Dr. John C. Clendenin of the UCLA School of Economics, Graduate School of Business, spoke on the subject of cycles and economics.

Letters to the Editor

SHORT STOCK MARKET CYCLES

Dear Mr. Dewey:

I have been much interested in your article on the 17-week cycle and particularly in the variation of cycle length, as reported on page 263 of the October issue.

It seems to me in studying this and other shorter cycles that you will ultimately be forced to use days as your measuring unit because of the different lengths of weeks as far as market time is concerned—this is, of course, due to holidays when the market is closed and also the fact that in some past periods the market has been open on Saturdays. I think you will find that the use of the number of hours that the market is open for business is a much better yardstick than either days or weeks.

Sincerely
Detroit, Michigan — Don T. Hastings

Comment:

I have operated on the theory that market cycles were forced—that is, caused by perfectly regular cycles (or possibly irregular cycles) outside the stock market. In other words that we should set up cycles on a basis of calendar time and not market days.

Apparently you think the cycles are dynamic and are generated by the market itself, that each day or each hour the market is open helps the cycle to unfold. In other words, if the market were open only half a week the cycles would be twice as long. You may be right.

I think this is a subject worth a most careful investigation

E. R. Dewey

Dear Mr. Dewey:

The following may be of some use to any who desire to work on the 17-week cycle. I have roughed it out back to 1928. I can't make much of the turbulent years from '29 to '33, but the cycle does go back to '34. As you suggested its length is longer than 17 weeks. It appears to be close to 120 days.

Sincerely,
West Tisbury, Mass. — H. M. B.

WILDLIFE CYCLES

Dear Mr. Dewey:

I was reading a new book last night and noted that there was quite a bit about the cycle of animal abundance in the Arctic. I doubt if there is anything that you are not already familiar with, but thought you might like to know of the material having been included.

The book is *The Arctic Year* by Peter Freuchen and Finn Salomonsen which was published in 1958 by C. P. Putman's Sons.

On Pages 112—113 the following cycles are mentioned:

Lemmings (2 species)	4 years	crest 1935
Voles	4 years	
Walrus, Gulls	3—6 years	
Snowshoe & Arctic Hares	10 years	
Ptarmigan	10 years	

Sincerely,
Hartford, Conn. — James A. Mitchell

SUNSPOTS

Dear Mr. Dewey:

Examination of the sunspot data reveals a striking resemblance between the Rates of Increase from the minima of 1954 and 1913, On the annexed table, I have given the years in the first column, the pertinent sunspot numbers in the second column, the ratios of consecutive numbers in the third column, the ratios of third to first, second to fourth, fifth to third in the fourth column, the ratios of fourth to first, fifth to second in the fifth column, and the ratio of fifth to first in the sixth column.

The table shows increases following the minima of 1856, 1913, and 1954. The minima of 1823 and 1810 were also followed by rapid rises, but I do not show them because they differ yet more strikingly than does 1856 from 1913 and 1954.

If the similarity persists, we may expect the sunspot maximum for the present cycle to occur in 1958.

Very sincerely yours,
Houston, Texas — L. W. Blau

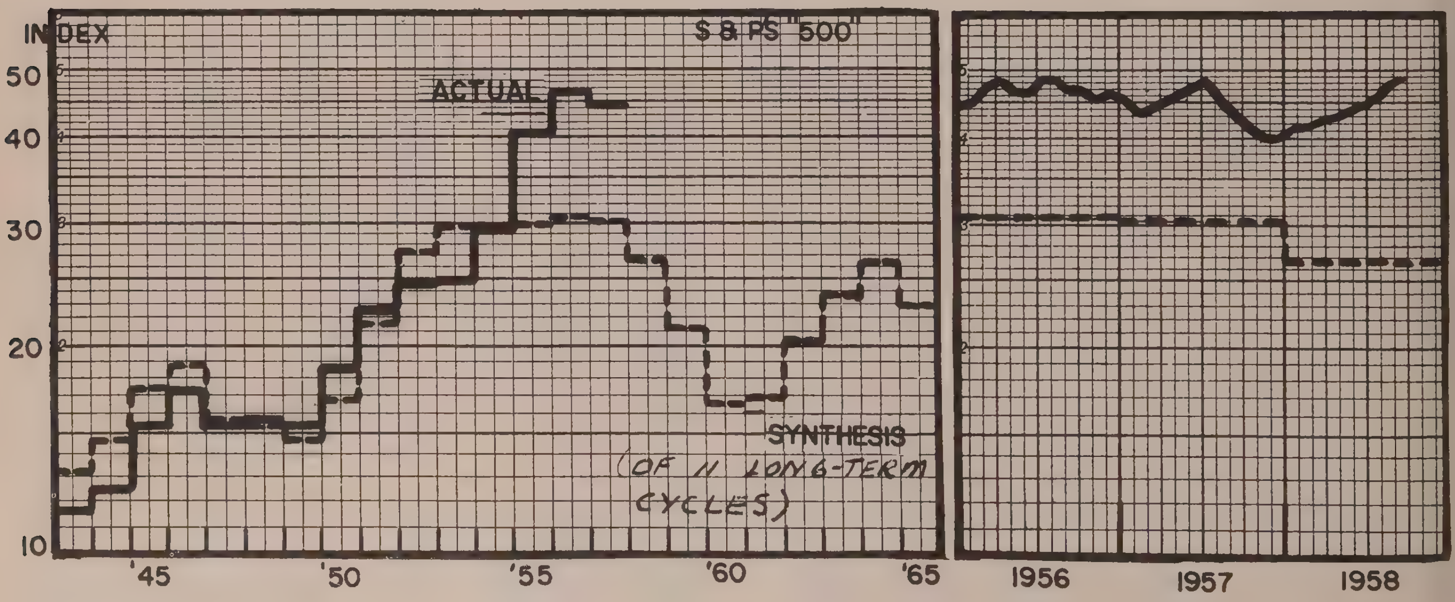
Year	Sunspot Number	1-Year Ratio	2-Year Ratio	3-Year Ratio	4-Year Ratio
1954	4.4				
1955	38.0	8.65			
1956	141.7	3.73	30.20		
1957	190.2	1.34	5.01	43.2	
1958					
1913	1.4				
1914	9.6	6.85			
1915	47.4	4.95	33.80		
1916	55.4	1.14	5.62	39.5	
1917	103.9	1.87	2.19	10.8	74.1
1856	4.3				
1857	22.8	5.30			
1858	54.8	2.40	12.75		
1859	93.8	1.71	4,11	21.8	
1860	95.7	1.02	1.75	4.2	22.2

The Cycle Round-up

DECEMBER 1958

Series	Unit	1958 Month	Amount
Aluminum Production	Thousand tons	Jul Aug	118.5 125.4
Automobile Factory Sales	Thousand cars	Aug	195
Bond Yields —Moody's: All Groups	Per Cent	Sep	4.39
Copper Prices—Electrolytic, New York	Cents per pound	Sep	26.08
Corn Prices—#3 yellow, Chicago	Cents per bushel	Sep	126.6
Liabilities of Business Failures	Million dollars	Sep	48
Oats Prices—#3 white, Chicago	Cents per bushel	Sep	62.1
Residential Building Contracts	Million dollars	Aug	1,451
Stock Prices—Standard & Poor's Combined Index	1941-43=10	Aug Sep	47.70 48.96
Sunspot Numbers	Numbers	Aug	204
Unemployment (% of labor force Unemployed)	Per Cent	Sep	5.98
Wheat Prices—#1 Dark Northern Spring, Minneapolis	Cents per bushel	Sep	221.8

STOCK PRICES



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The Geisinger Indicator

FORECAST

The Geisinger Indicator for June (February 1959 when projected) rose to +3.80. This is the second month that the Geisinger Indicator has exceeded +2.00.

In the past a +2.00 on a rising Indicator has meant that Industrial Production as measured by the Federal Reserve Board's Index would increase. A +2.00 signal on a rise is rather like a smoke signal saying, "Increased production ahead." The Indicator refers only to Industrial Production--it has nothing to do with the stock market. Also, the Indicator does not say how far up production will go, nor how long the increase will be maintained.

The First Difference Indicator was off slightly in August which means that the rate of increase in the Production Index has slowed down. However, it is not to be expected that the rapid increase in production which we had from April through August would be sustained for long.

The Federal Reserve Board Index of Industrial Production rose again in September to 137. The reported August Index of Production was revised by the Federal Reserve Board to 136.

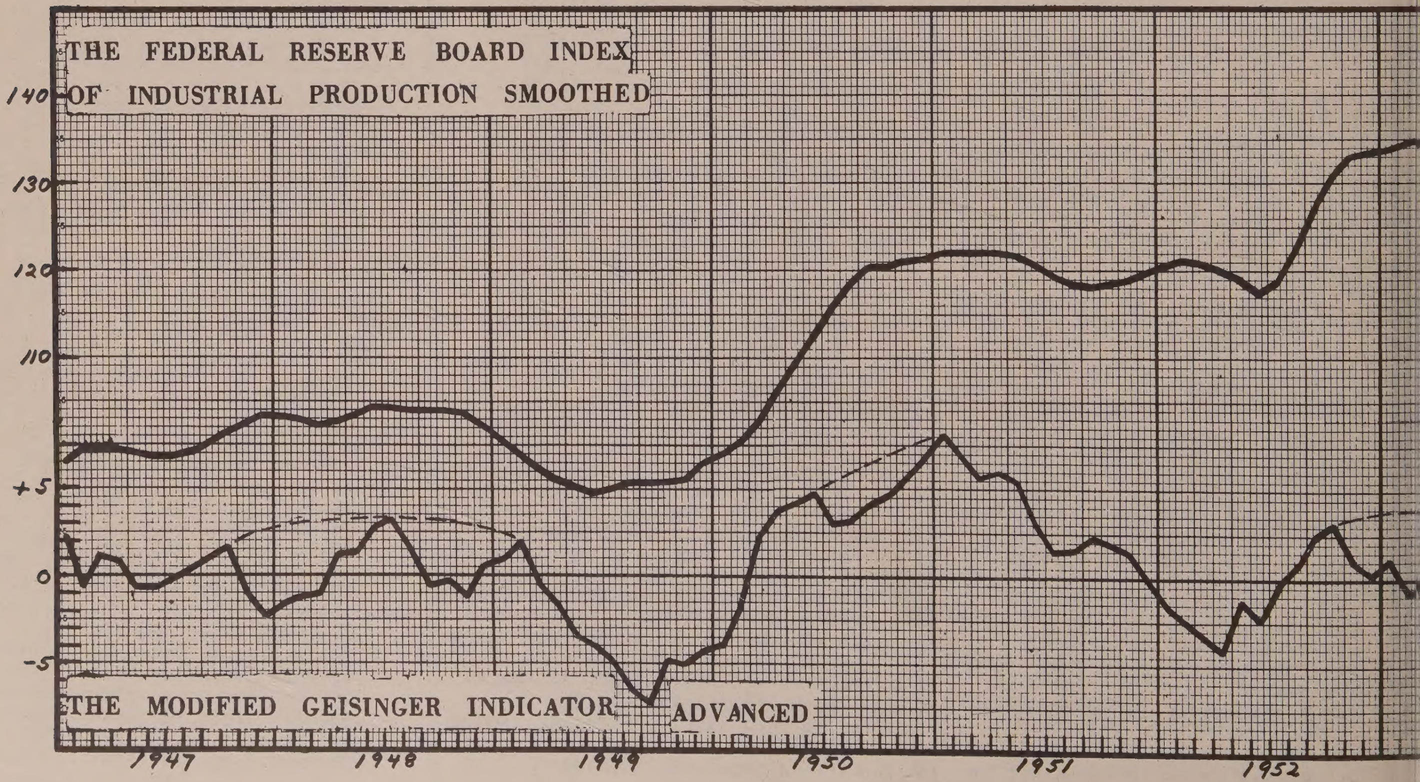
The Modified Indicator reached the highest level since 1956 when it touched +5.80 in June (February 1959 when projected).

The green light is still shining brightly.

October 30, 1958 *Edward R. Dewey*

Month	1 F.R.B. Index	2 Geisinger Indicator	3 First Difference Indicator	4 Modified Geisinger Indicator	Timing Advanced 8 Months
Jan. 1958	133	-3.8	-3.00	-6.8	Sept. 1958
Feb.	130	-2.6	-2.66	-5.26	Oct. 1958
Mar.	128	-1.0	-2.33	-3.33	Nov. 1958
Apr.	126	-0.4	-1.50	-1.90	Dec. 1958
May	128	+3.0	+0.33	+3.33	Jan. 1959
June	132	3.8	+2.00	5.80	Feb. 1959
July	134	*	+2.67r	*	Mar. 1959
Aug.	136r	*	+2.17p	*	Apr. 1959
Sep.	137p				May 1959

p - preliminary * - not yet available r - revised



BACKGROUND

Explanation

The Modified Geisinger Indicator is a series of numbers which, in the past, have usually gone up and down ahead of corresponding movements of the Federal Reserve Board Index of Industrial Production. The Modified Geisinger Indicator thus throws some light on the probabilities of the future.

The Modified Geisinger Indicator is the sum of two Indicators, the Geisinger Indicator and The First Difference Indicator.

The Geisinger Indicator was invented by Robert Geisinger. It is derived from figures which are published each month in the *Survey of Current Business*. (See Col. 2 of the table.)

The First Difference Indicator, is merely the amount by which the smoothed F. R. B. Index is above or below the value for the preceding month. It registers the *rate* of advance or decline. It has some forecasting value, too. (See Col. 3 of the table.)

The sum of these two Indicators makes the *Modified* Geisinger Indicator. See Col. 4 of the Table. It is advanced by eight months and plotted as the bottom line of the chart.

The F. R. B. Index of Industrial Production measures physical production in the U. S. A. It is a weighted average of tons, yards, gallons, and numbers of things produced each month. See (Col. 1 of the Table.)

The smoothed values of the F. R. B. Index of Industrial Production are plotted below as the top line on the chart. The smoothing is effected by means of a centered 3-month moving average posted to the second position. The latest actual monthly Index of Production is recorded by a dot.

Industrial Production has *nothing* to do with stocks.

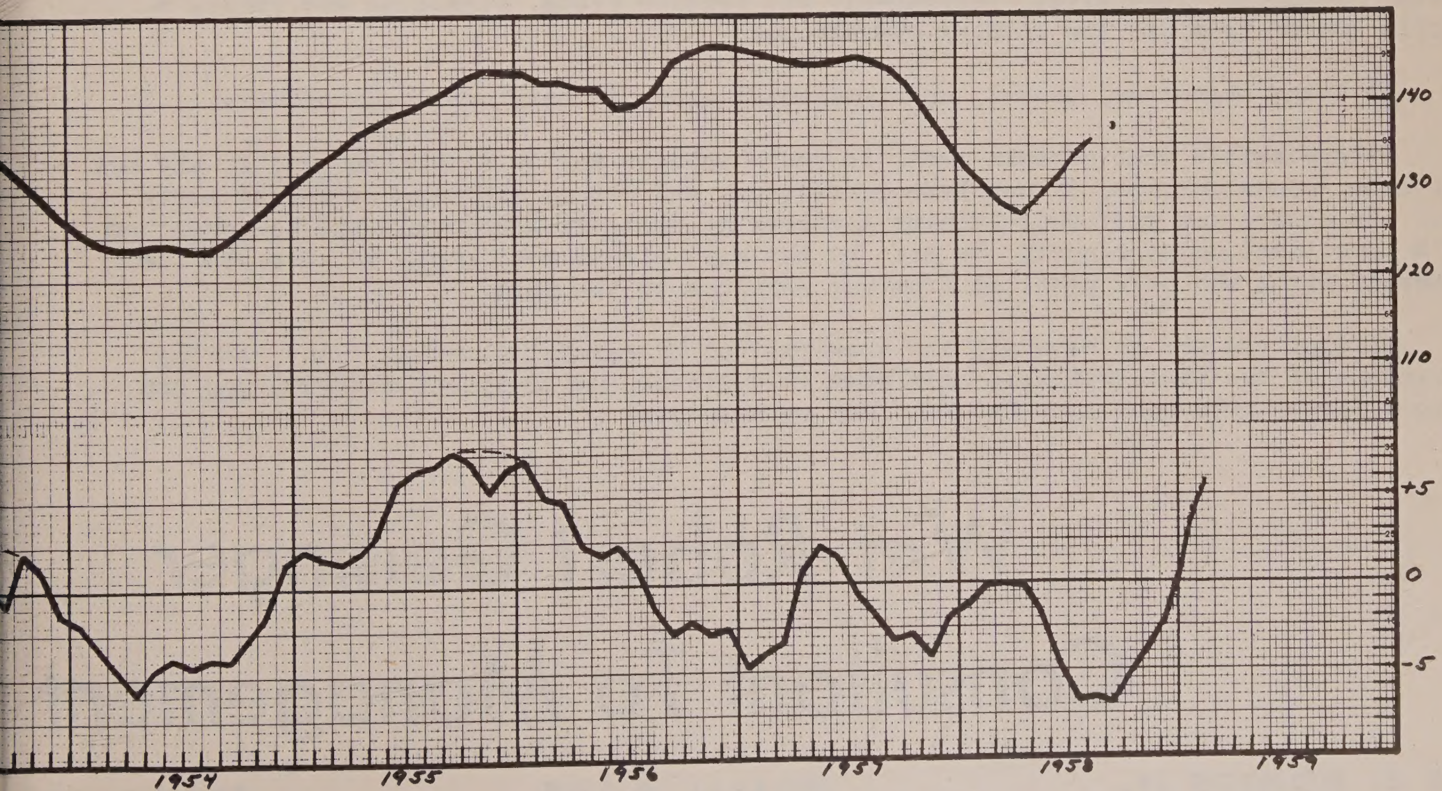
Interpretation

In the past, when the *Geisinger* Indicator (Col. 2), going up, has cut +2, good business has followed; when, going down, it has cut -2, bad business has followed.

The important *turns* of the *Geisinger* Indicator (Col. 2) and the *Modified* Geisinger Indicator (Col. 4) often come about 8 or 9 months before the corresponding turns of the Index of Industrial Production. This fact gives some idea of what is around the corner. To help you to grope your way into tomorrow the Modified Geisinger Indicator is advanced 8 months. Where *it* is now, Industrial Production may soon be.

The degree to which the two curves (Industrial Production and the Modified Geisinger Indicator advanced by 8 months) correspond can be seen by inspection of the chart.

The correspondence between the two lines on the chart is general rather than specific. It is not to be expected that every little wiggle in the Modified Geisinger Indicator is significant. It is rather the broad sweep of the line which is to be watched. The dashed lines which are added show the manner in which the eye should follow the Indicator.



Mr. H. A. Musham
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Chicago, Ill.

ON YOUR MARK, GET SET, GO!

Sure, the GEISINGER INDICATOR said "GO", but are you ready to "GO"?

Are you "SET"? or even on your "MARK"?

Certainly business volume will exist this coming year, but will your competitor enjoy it or you?

As Consultants to Management, we help you secure a firmer grip upon your future by bringing the complexities of your business into sharper focus, so that TODAY'S decisions are based upon knowledge of today and tomorrow expectations with greater certainty.

We are not fortune-tellers, nor are we infalliable, but years of experience enable us to do these things with a most surprising degree of accuracy.

Forecasting, however, is only one of the many services we provide for our clients. We survey overall company operators, or any facet of them, and submit basic recommendations. We work in highly specialized areas such as mergers, budgets, and controls, marketing and distribution, advertising and promotion, production planning and plant layouts. We also study the basic organizational structure of a company, as well as those problems peculiar to Presidents. Some of the latter involve evaluation of personnel, forward planning, incentives, retirement, and pension plans, financing and making a profit appear from all the complex operations.

We bring objective, honest, and impersonal study to bear upon your affairs.

It's possible that certain areas in your business may be troubling you, so why not write or 'phone collect, in complete confidence, and let us explain how we can serve you. We assure you that your inquiry involves no obligation and will not be construed as a commitment on your part. We are, by the way, always most happy to give you the names of firms who have profited from our services in the past.

Neither you nor we have all the answers, but by careful planning today, taking advantage of the best available knowledge in business, using proven methods, you can have a firmer grip upon your future. May we help you?

Wm. Robert Geisinger
Consultant To Management

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